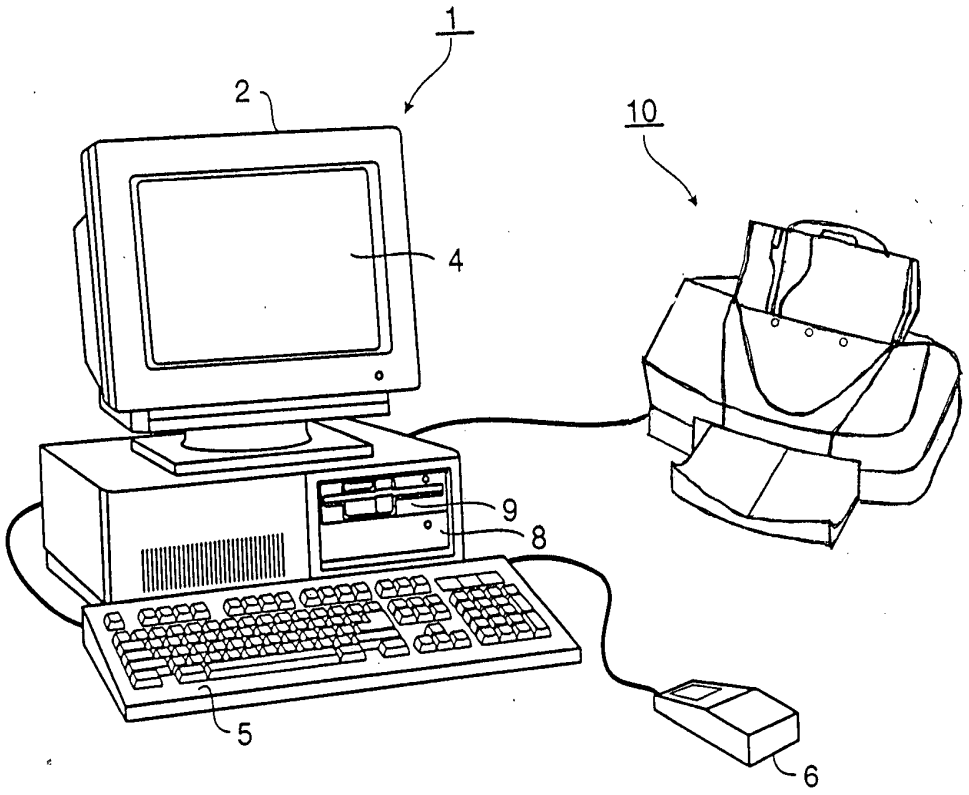

FIGURE 1

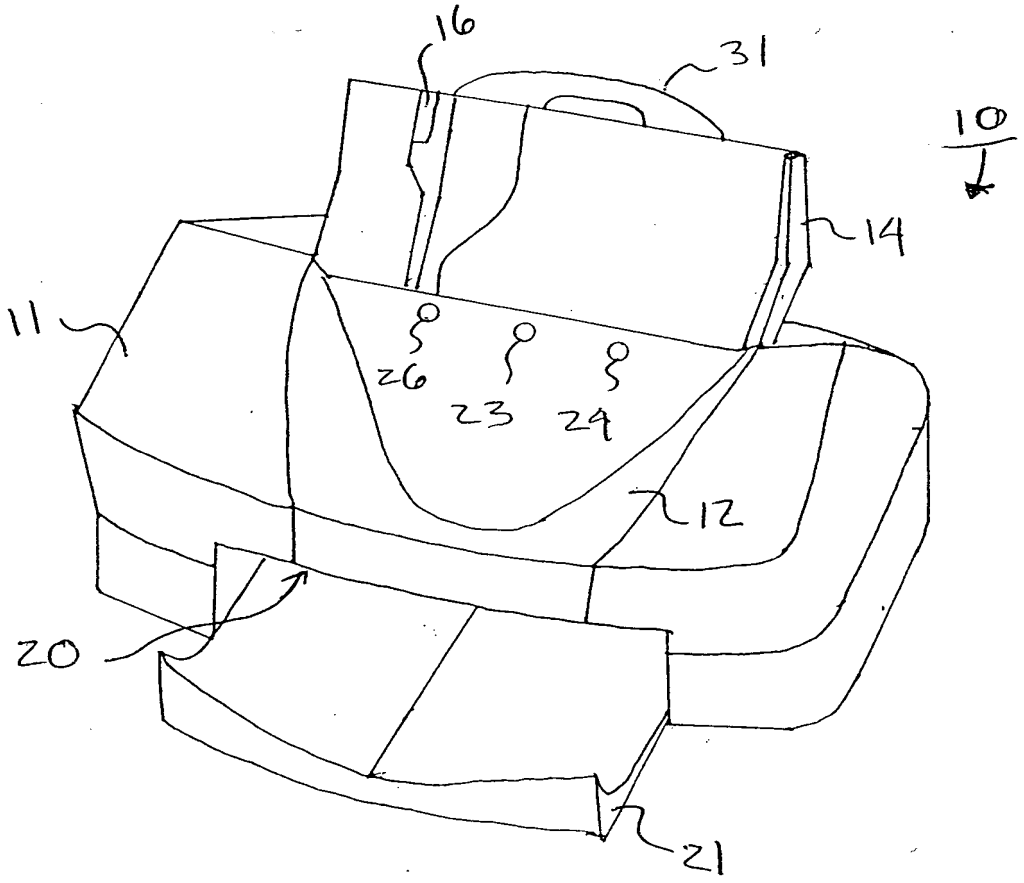

FIGURE 2

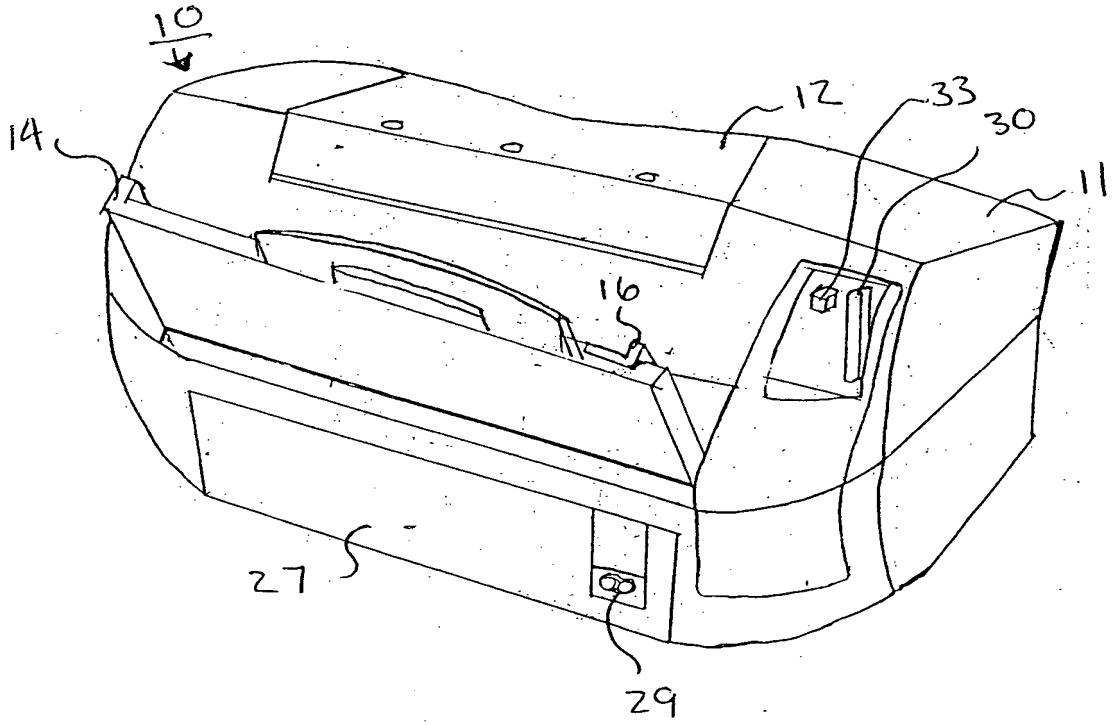

FIGURE 3

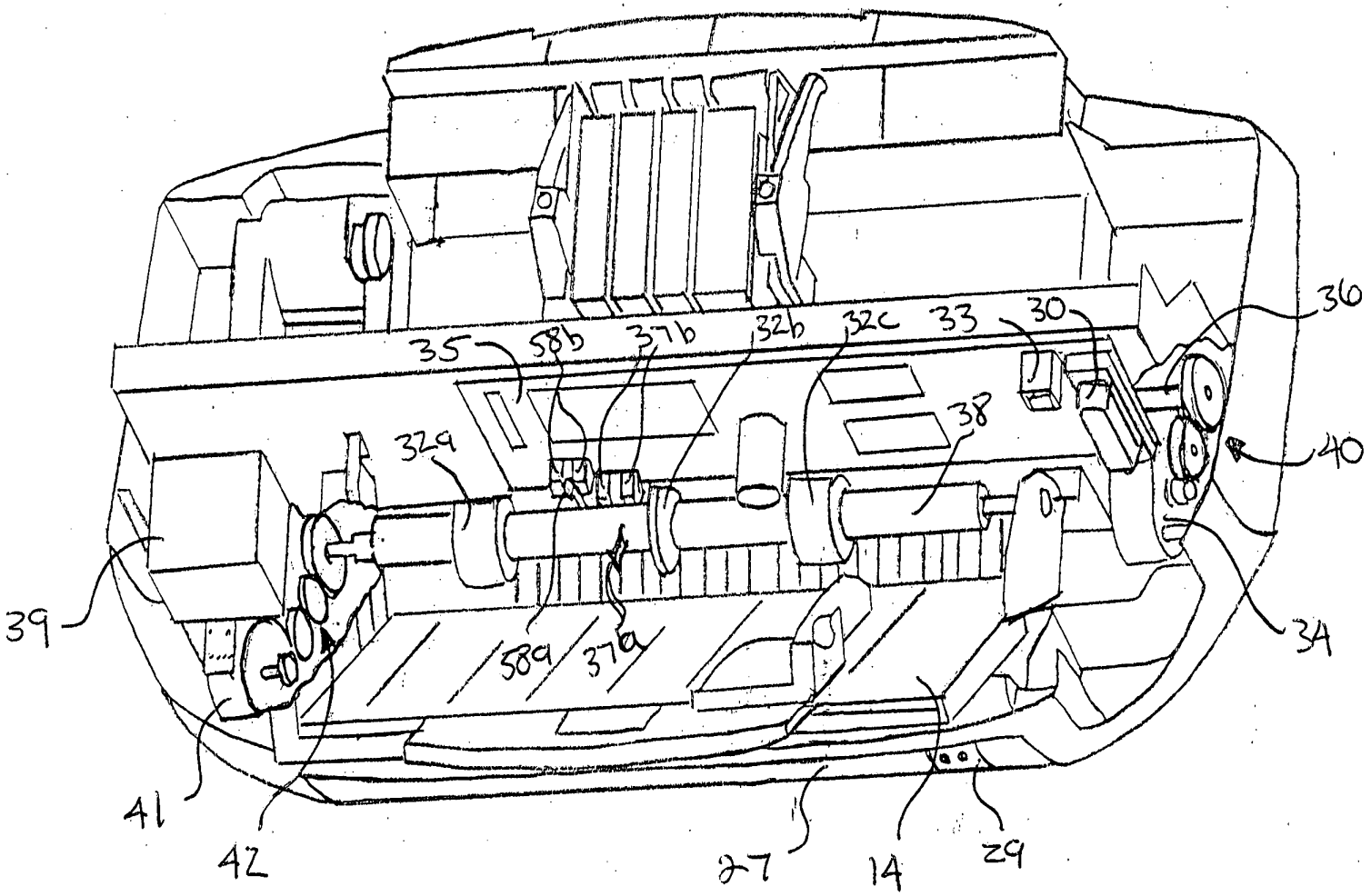

FIGURE 4

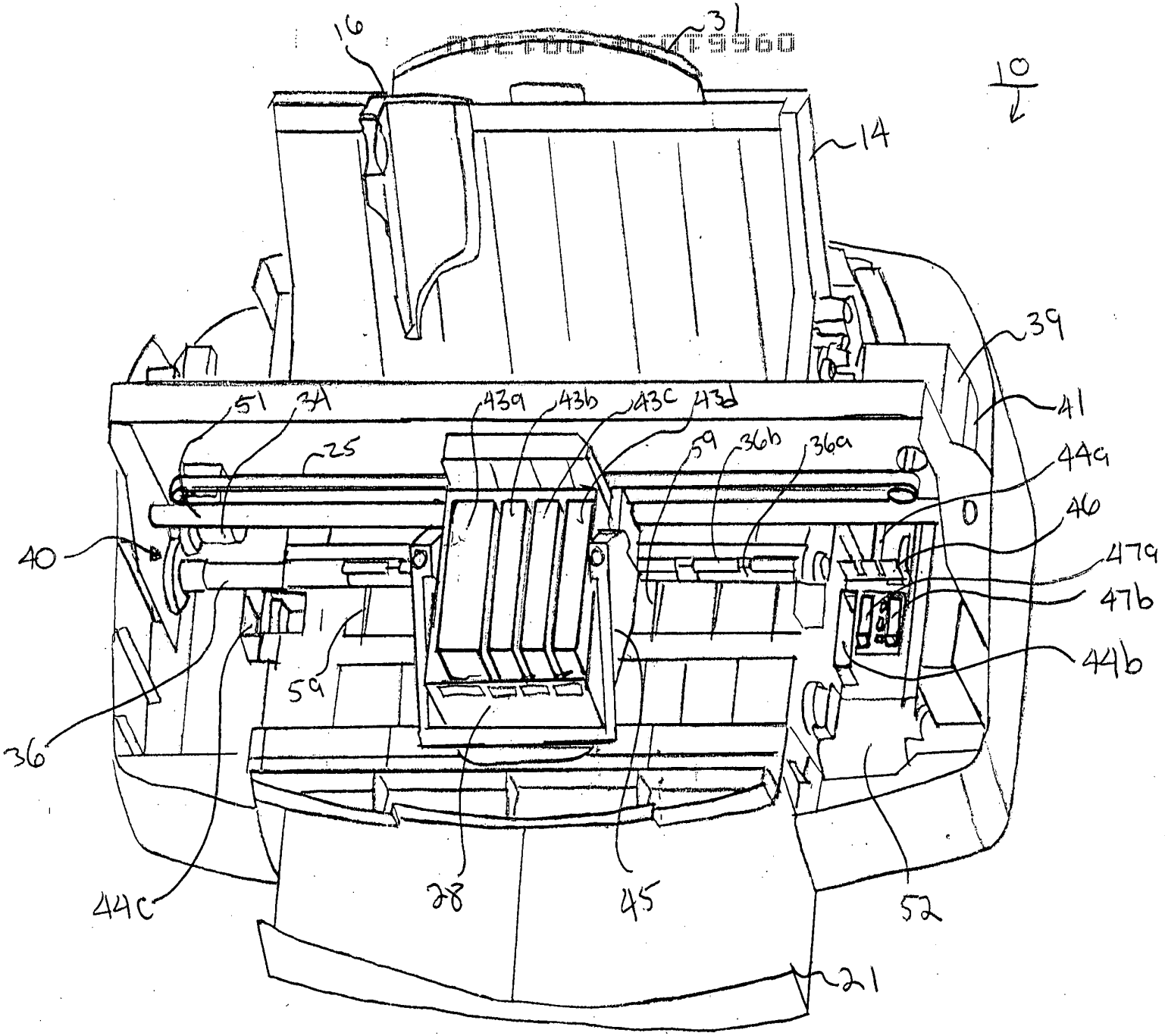
16
31
10
14
39
41
51
34
43a
43b
43c
43d
25
59
36b
36a
44a
46
40
47a
47b
44b
59
36
44c
28
45
52
21

FIGURE 5

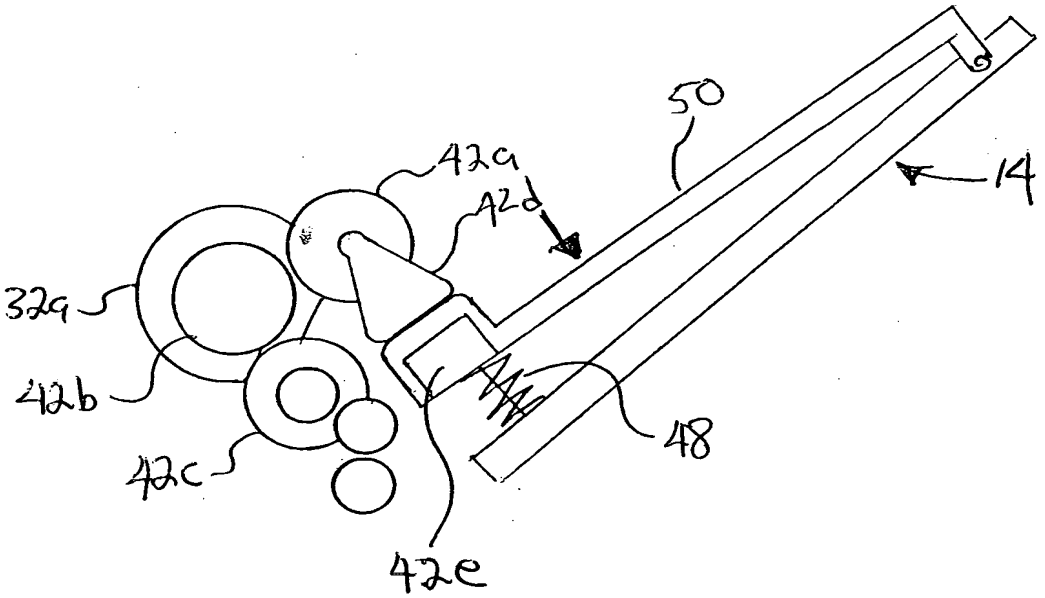

FIGURE 6A

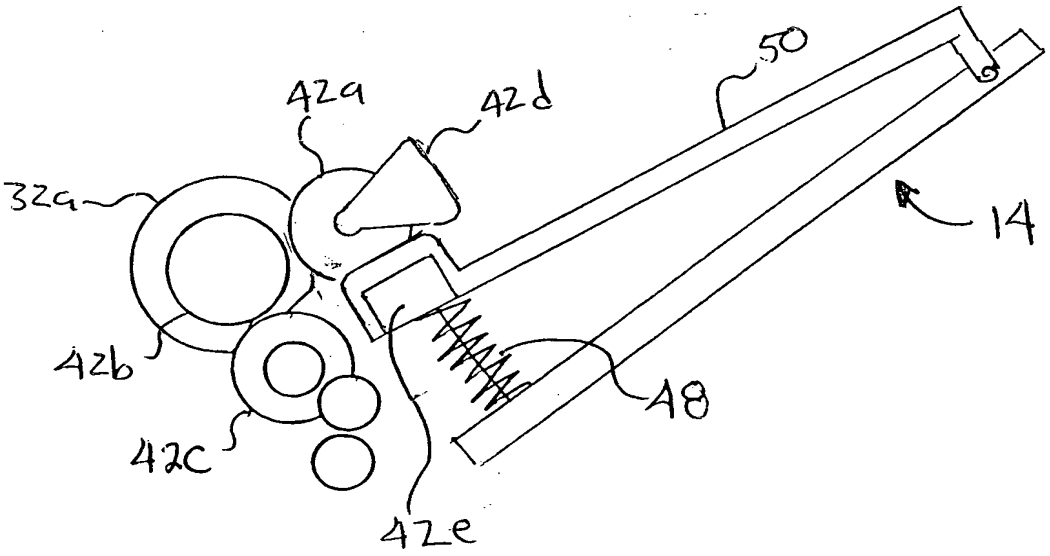

FIGURE 6B

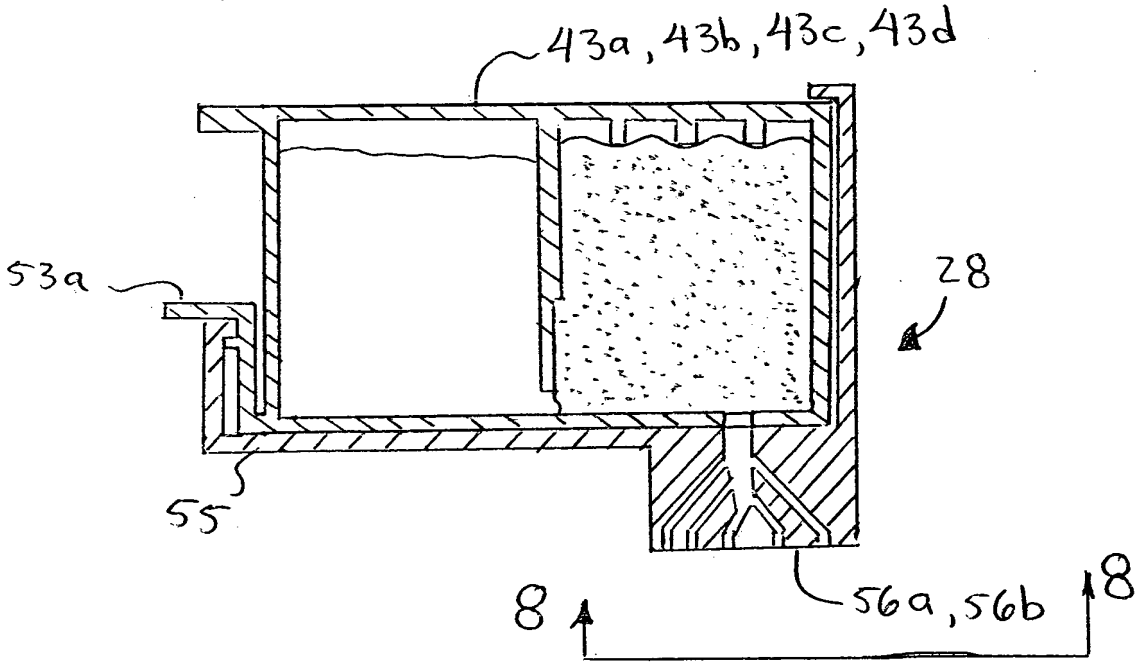

FIGURE 7

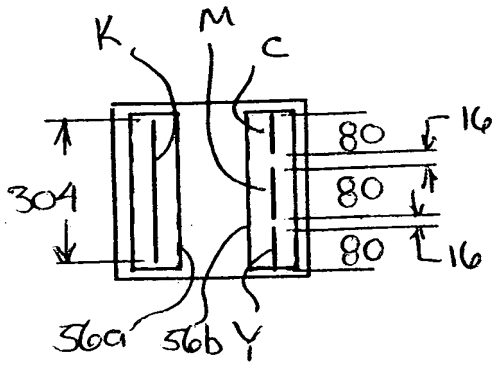

FIGURE 8

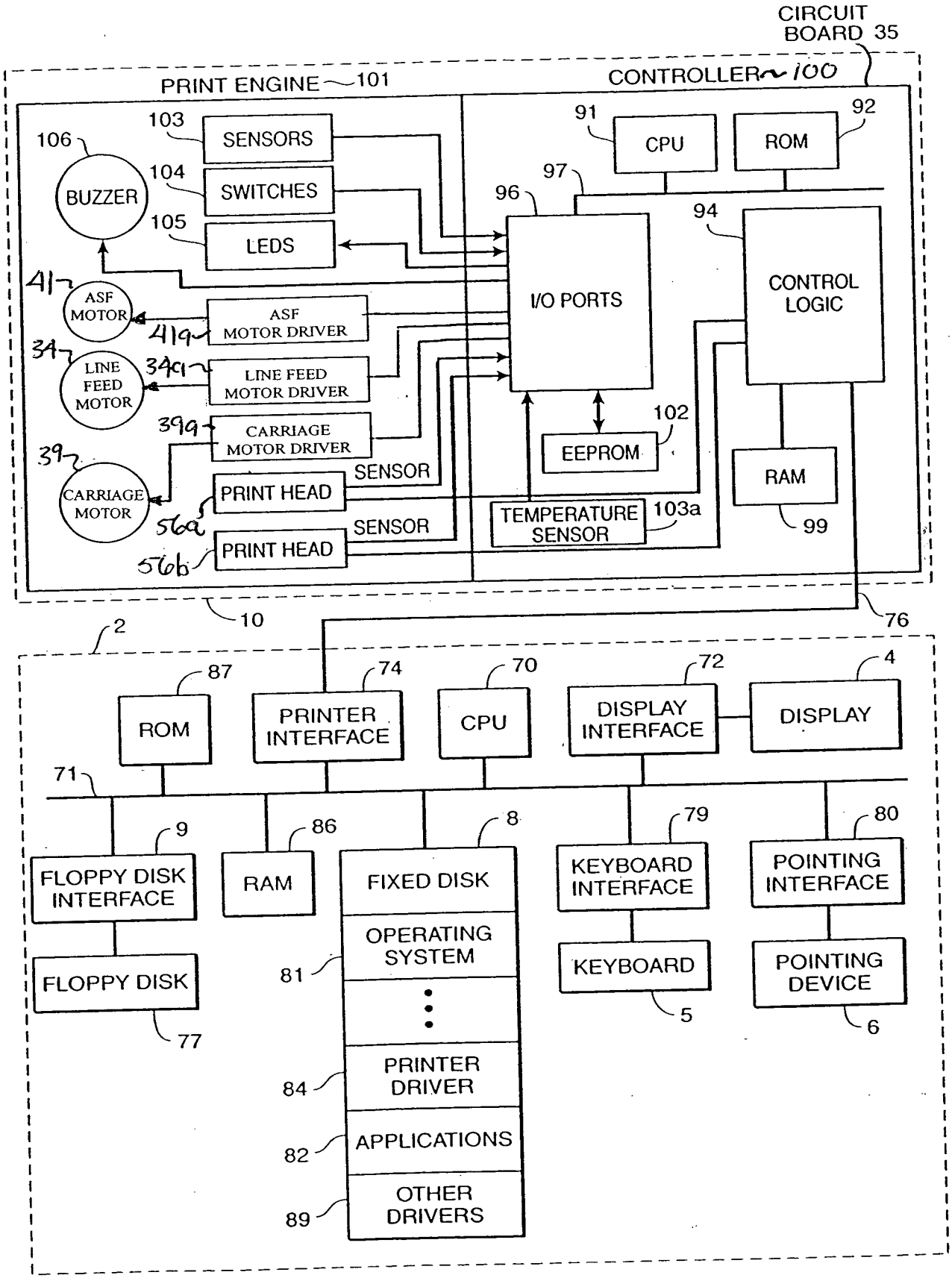
CIRCUIT BOARD 35
PRINT ENGINE 101
CONTROLLER 100
103
SENSORS
106
BUZZER
104
SWITCHES
105
LEDS
91
CPU
92
ROM
97
96
94
I/O PORTS
CONTROL LOGIC
41
ASF MOTOR
41a
ASF MOTOR DRIVER
34
LINE FEED MOTOR
34a
LINE FEED MOTOR DRIVER
39a
CARRIAGE MOTOR DRIVER
102
EEPROM
39
CARRIAGE MOTOR
SENSOR
PRINT HEAD
56a
SENSOR
PRINT HEAD
56b
TEMPERATURE SENSOR
103a
RAM
99
10
76
2
87
ROM
74
PRINTER INTERFACE
70
CPU
72
DISPLAY INTERFACE
4
DISPLAY
71
9
FLOPPY DISK INTERFACE
FLOPPY DISK
77
86
RAM
8
FIXED DISK
OPERATING SYSTEM
81
PRINTER DRIVER
84
APPLICATIONS
82
OTHER DRIVERS
89
79
KEYBOARD INTERFACE
KEYBOARD
5
80
POINTING INTERFACE
POINTING DEVICE
6

FIGURE 9

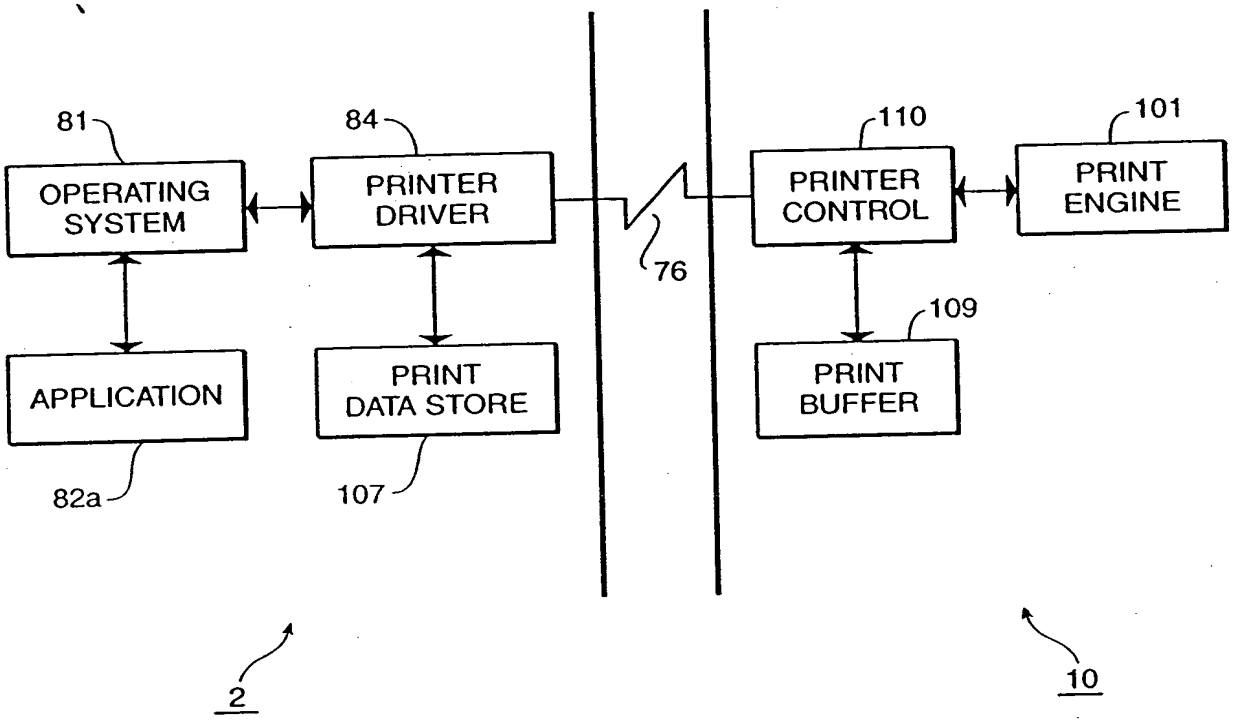
81
OPERATING SYSTEM
84
PRINTER DRIVER
110
PRINTER CONTROL
101
PRINT ENGINE
76
APPLICATION
82a
PRINT DATA STORE
107
109
PRINT BUFFER
2
10

FIGURE 10

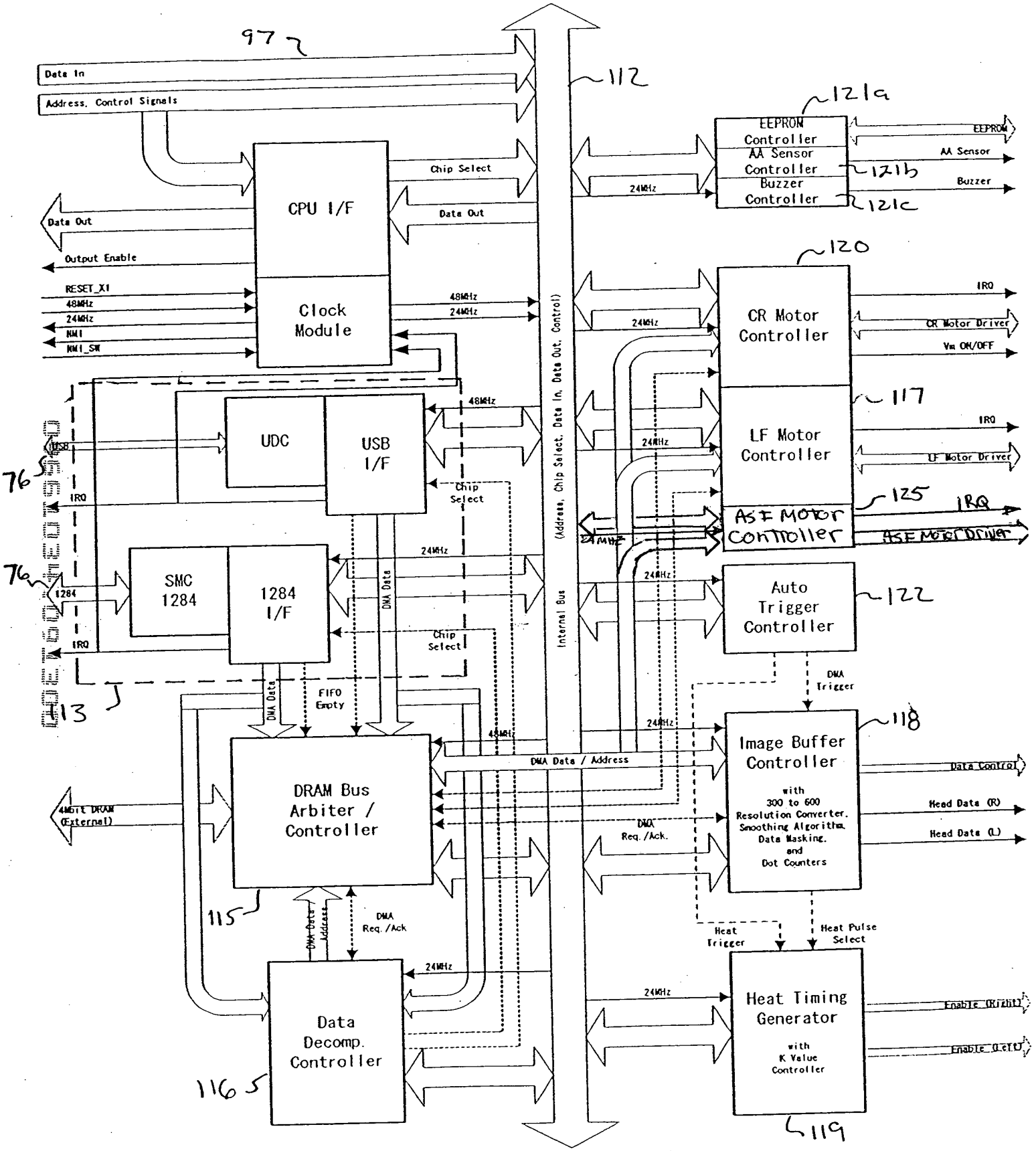
97
Data In
Address, Control Signals
112
121a
EEPROM Controller
AA Sensor Controller
Buzzer Controller
121b
121c
EEPROM
AA Sensor
Buzzer
24MHz
CPU I/F
Chip Select
Data Out
Data Out
Output Enable
RESET_XI
48MHz
24MHz
NMI
NMI_SW
Clock Module
48MHz
24MHz
120
CR Motor Controller
IRQ
CR Motor Driver
Vm ON/OFF
117
LF Motor Controller
IRQ
LF Motor Driver
125
ASF Motor Controller
IRQ
ASF Motor Driver
Auto Trigger Controller
122
DMA Trigger
118
Image Buffer Controller
with 300 to 600 Resolution Converter, Smoothing Algorithm, Data Masking, and Dot Counters
Data Control
Head Data (R)
Head Data (L)
UDC
USB I/F
USB
IRQ
76
48MHz
Chip Select
SMC 1284
1284 I/F
1284
IRQ
76
24MHz
DMA Data
Chip Select
113
DMA Data
FIFO Empty
48MHz
DMA Data / Address
DRAM Bus Arbiter / Controller
4MBit DRAM (External)
115
DMA Data / Address
DMA Req. /Ack
DMA Req. /Ack.
Heat Trigger
Heat Pulse Select
24MHz
Data Decomp. Controller
1165
24MHz
Heat Timing Generator
with K Value Controller
119
Enable (Right)
Enable (Left)
Internal Bus (Address, Chip Select, Data In, Data Out, Control)

FIGURE 11

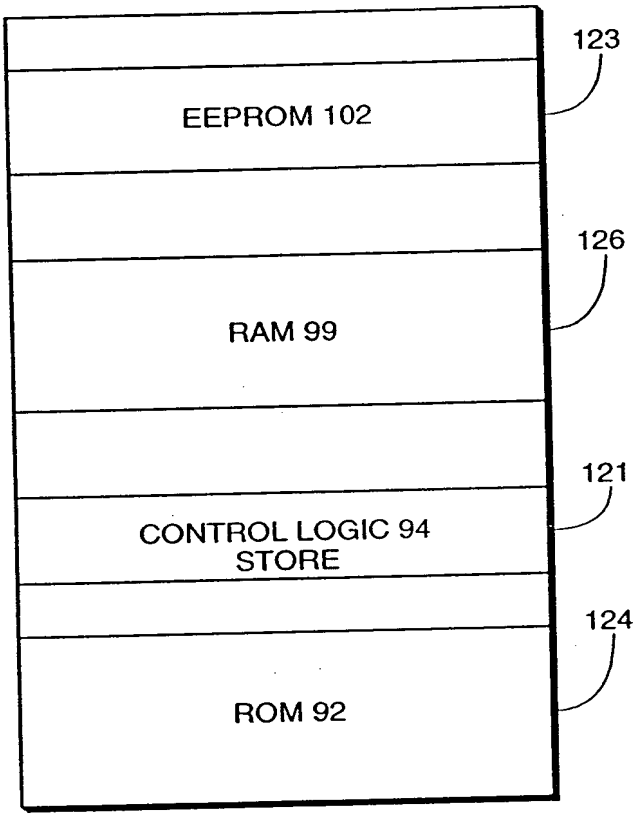
123
EEPROM 102
126
RAM 99
121
CONTROL LOGIC 94
STORE
124
ROM 92

FIGURE 12

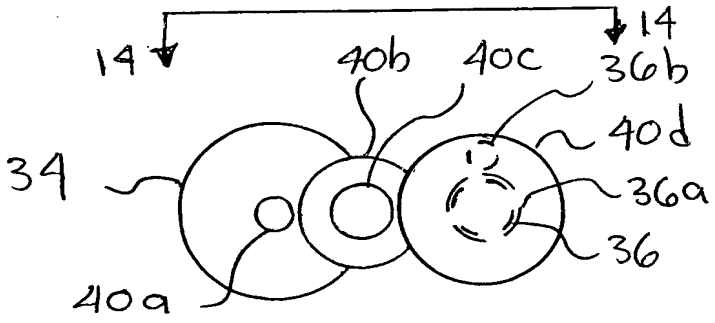

FIGURE 13

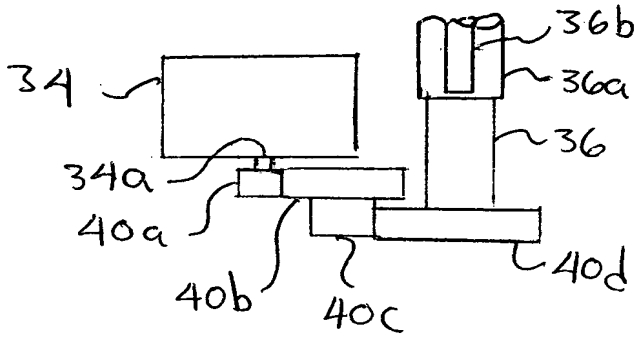

FIGURE 14

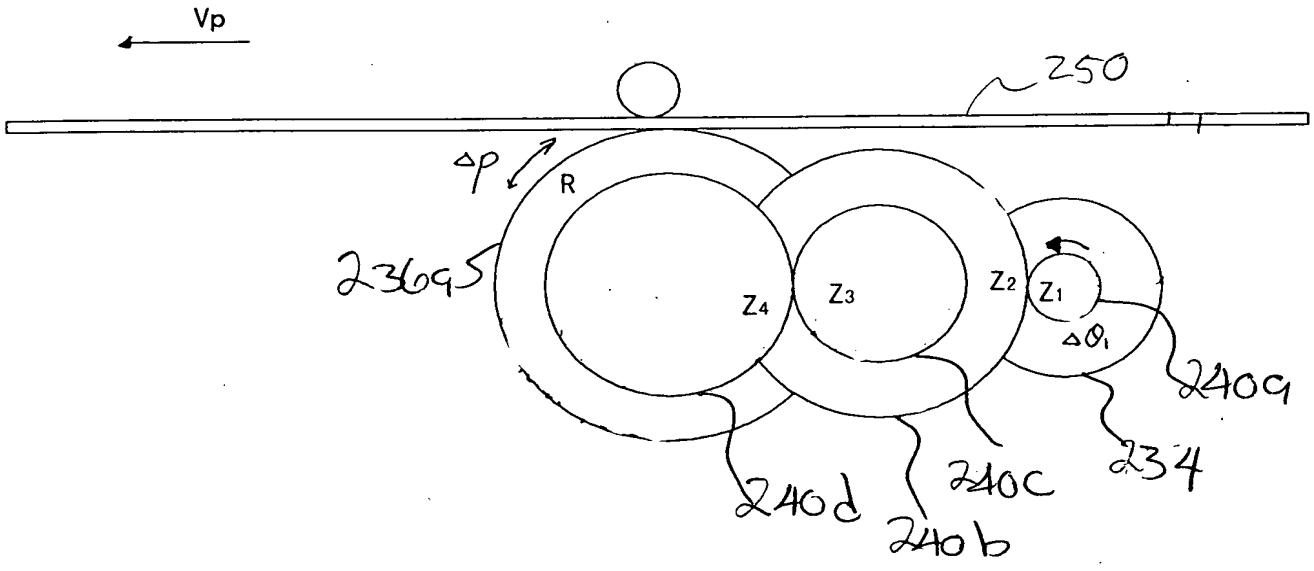

FIGURE 15

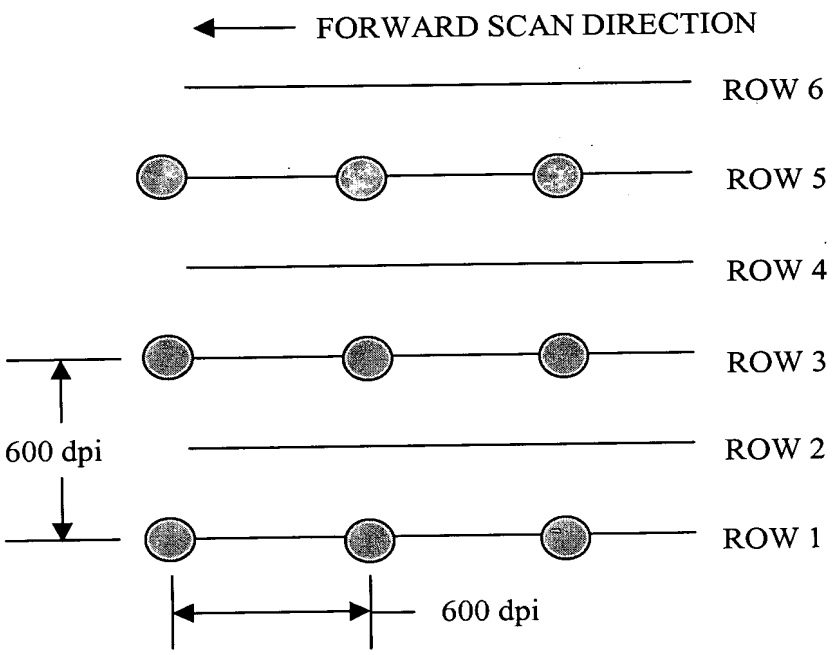

FIGURE 16A

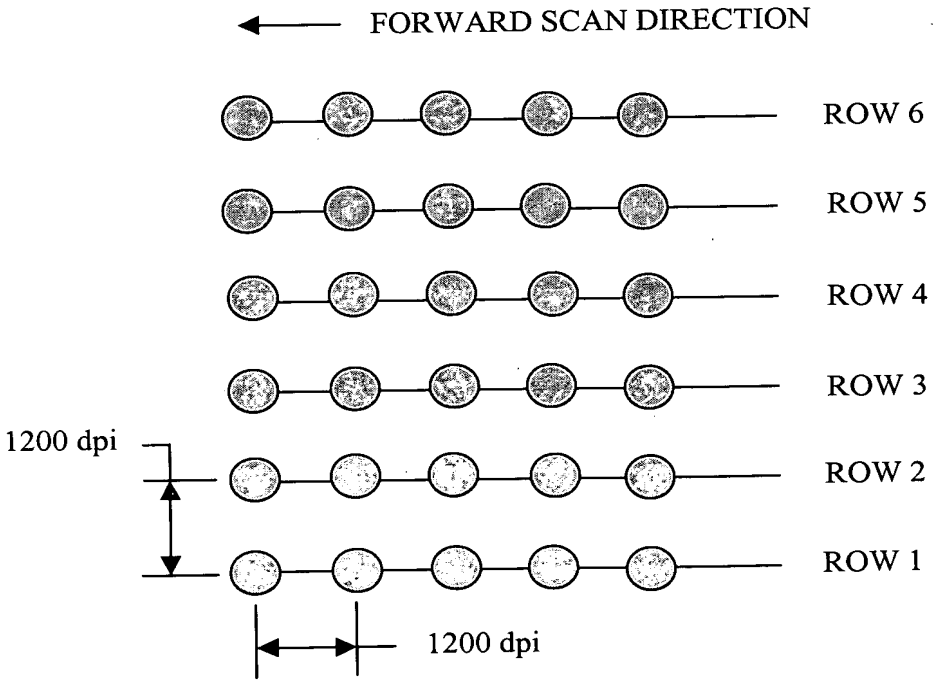

FIGURE 16B

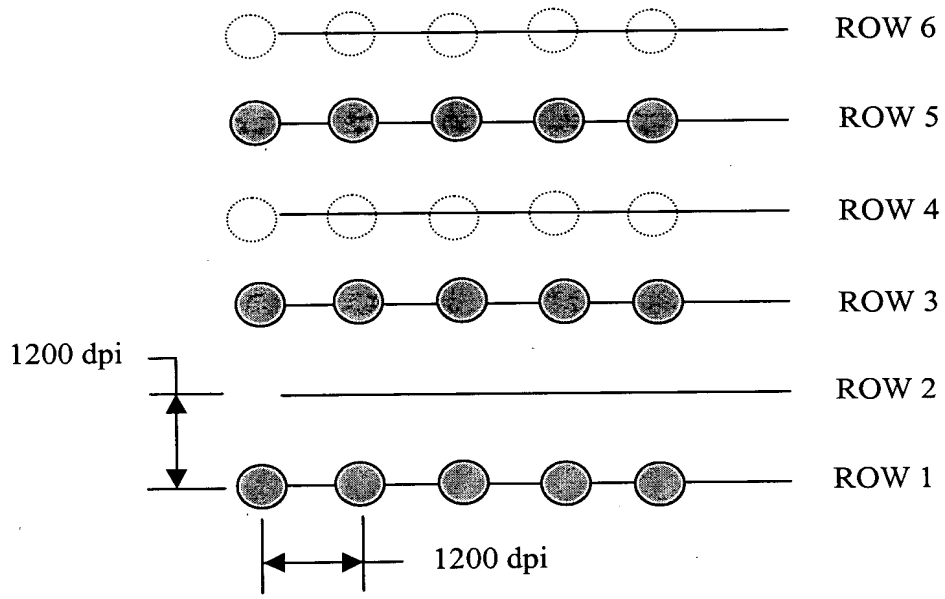

FIGURE 16C

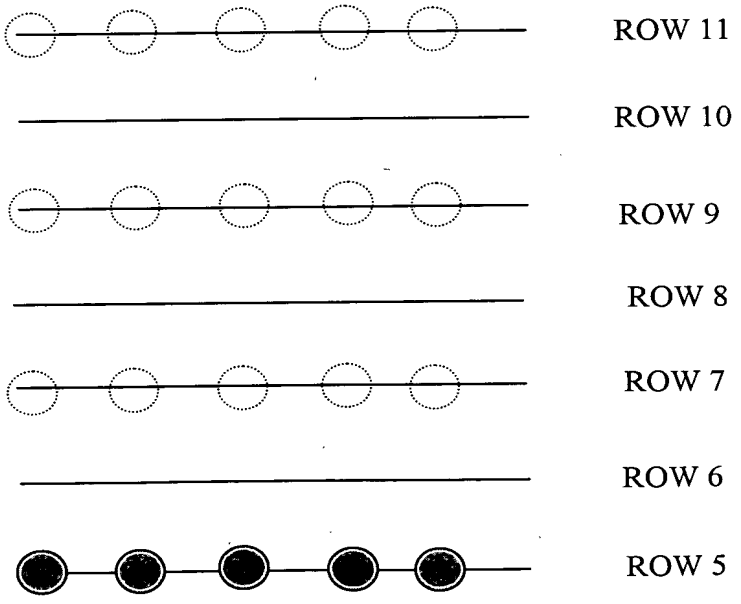

FIGURE 16D

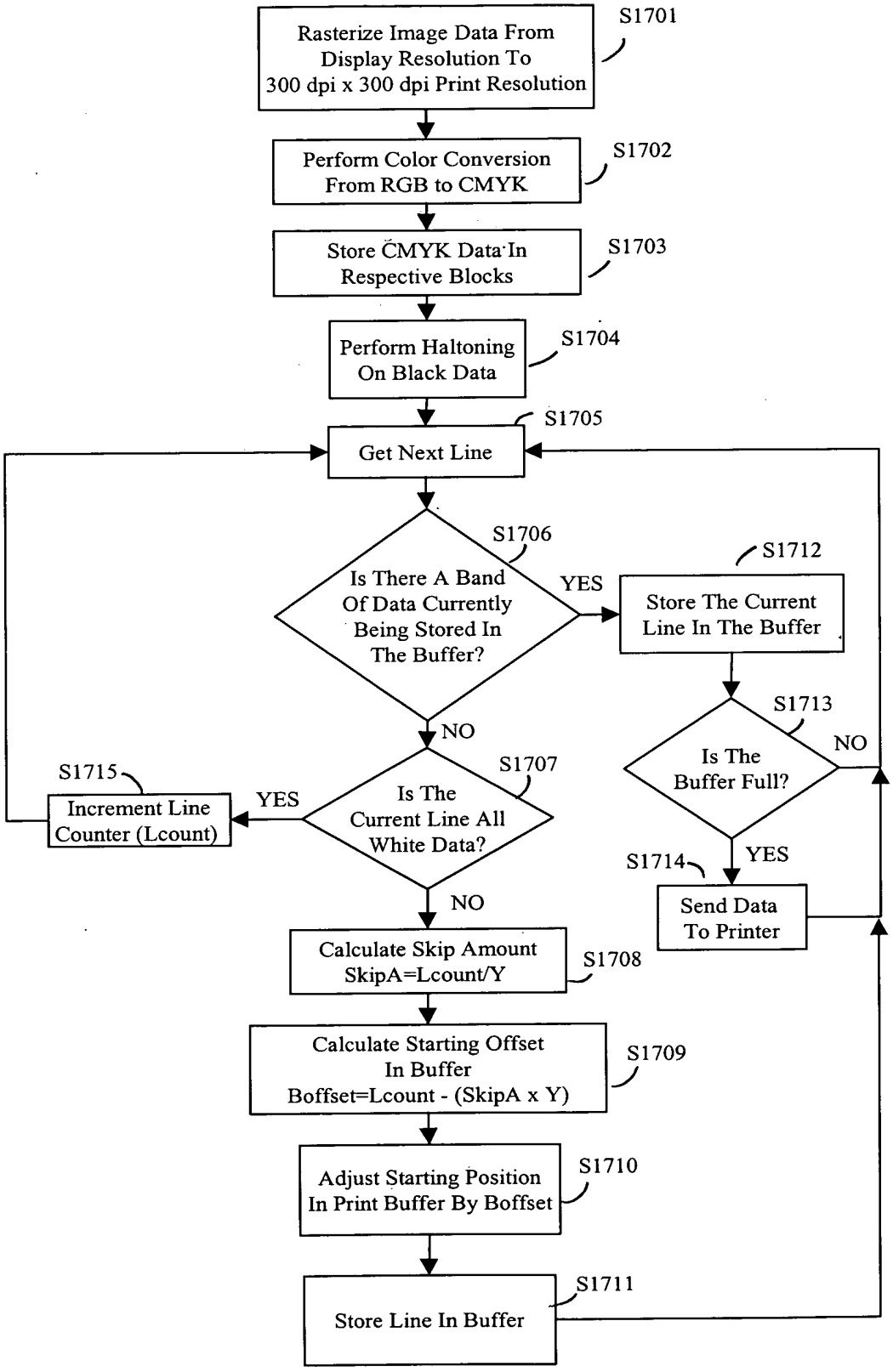
Rasterize Image Data From Display Resolution To 300 dpi x 300 dpi Print Resolution
S1701
Perform Color Conversion From RGB to CMYK
S1702
Store CMYK Data In Respective Blocks
S1703
Perform Haltoning On Black Data
S1704
Get Next Line
S1705
Is There A Band Of Data Currently Being Stored In The Buffer?
S1706
YES
NO
Store The Current Line In The Buffer
S1712
Is The Buffer Full?
S1713
NO
YES
Send Data To Printer
S1714
Is The Current Line All White Data?
S1707
YES
NO
Increment Line Counter (Lcount)
S1715
Calculate Skip Amount SkipA=Lcount/Y
S1708
Calculate Starting Offset In Buffer Boffset=Lcount - (SkipA x Y)
S1709
Adjust Starting Position In Print Buffer By Boffset
S1710
Store Line In Buffer
S1711

FIGURE 17

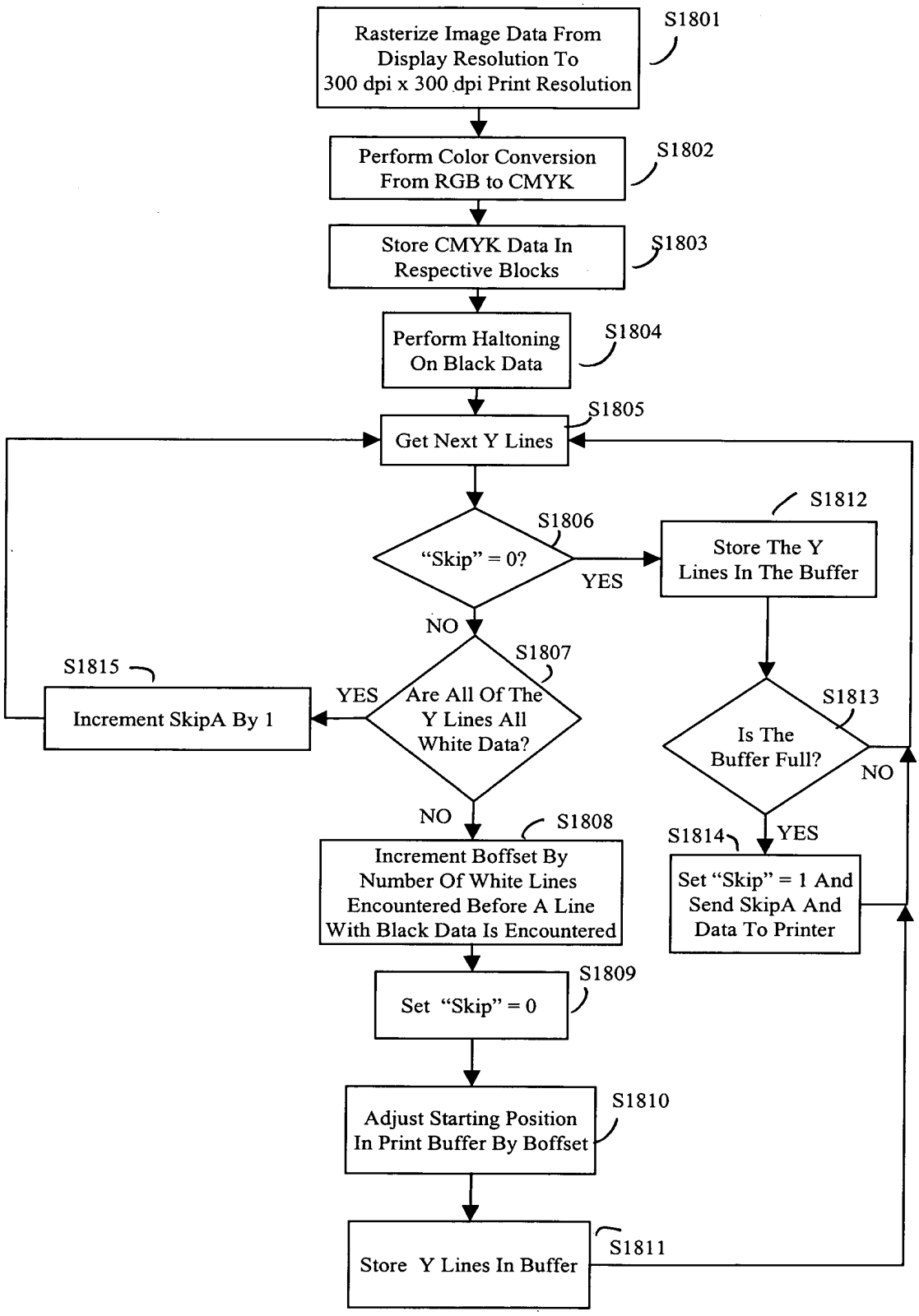
Rasterize Image Data From Display Resolution To 300 dpi x 300 dpi Print Resolution
S1801
Perform Color Conversion From RGB to CMYK
S1802
Store CMYK Data In Respective Blocks
S1803
Perform Haltoning On Black Data
S1804
Get Next Y Lines
S1805
"Skip" = 0?
S1806
YES
NO
Store The Y Lines In The Buffer
S1812
Are All Of The Y Lines All White Data?
S1807
YES
NO
Increment SkipA By 1
S1815
Is The Buffer Full?
S1813
NO
YES
Set "Skip" = 1 And Send SkipA And Data To Printer
S1814
Increment Boffset By Number Of White Lines Encountered Before A Line With Black Data Is Encountered
S1808
Set "Skip" = 0
S1809
Adjust Starting Position In Print Buffer By Boffset
S1810
Store Y Lines In Buffer
S1811

FIGURE 18